Space Weather Forecast

Issued on Thursday, 25 July 2024 at 01:23 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of R1 Radio Blackouts throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity has remained Moderate, with two Moderate-class flares in the past 24 hours, with peak flare observed at 24/0742 UTC. There are currently eleven sunspot regions on the solar disc. The two closely residing spots in the southwest have continued a slow decay. The large spot in the southwest approaching centre disk, is the most complex spot, with up to two elements of magnetic complexity. Two small and simple groups have recently become evident near the eastern limb. All other remaining regions are small or simple.

No Earth-directed coronal mass ejections have been observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind indicated waning effects of a weak coronal mass ejection which arrived 23/1950 UTC. Speeds remained slow throughout. The interplanetary magnetic field was briefly strong at first, then mostly moderate to weak on a declining trend. The important north-south component was almost entirely positive (northward). The net result of the above solar wind measures was for Quiet (Kp 1-2) geomagnetic indices.

Energetic Particles / Solar Radiation: Radiation levels have returned back to background levels after a period above S1 during 23 Jul following a large far sided full halo coronal mass ejection.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is expected, with a chance of further Moderate-class flares.

Solar Wind /Geomagnetic Activity: No coronal hole fast winds feature in the forecast period. There are up to two coronal mass ejections possible in the period. The first would be a very late arrival of the full halo from 21 July, but any impacts are likely to be weaker than previously anticipated. The second was from a long period Moderate class flare close to the southeast limb on 23 Jul, with low confidence of peripheral glancing impacts at Earth possible either late on day 2 or early day 3 (26/27 Jul).

Geomagnetic activity is expected to remain Quiet to Unsettled throughout. There is a chance of Active intervals and a slight chance of G1/Minor storms should either coronal mass ejection arrive between days 1-3 (25-27 Jul).

Energetic Particles / Solar Radiation: There is a slight chance of rising above the S1/Minor Storm threshold in response to any notable flares throughout the period.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	20	20	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	50	50	50	50
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	Yes	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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